

REMARKS

Reconsideration of this application is respectfully requested. Claims 1, 3-29 and 84-98 were pending in the application and under consideration. Claims 3-29 were withdrawn from consideration in an Election of November 21, 2005, but may be added to the application if found dependent on an allowable base claim. By the foregoing amendment, claims 85, 87 and 98 have been amended to accurately state antecedent basis. Claims 1, 3-29 and 84-98 remain pending. Claims 1 and 84-98 are presented for examination.

Claim Objections

Claim 98 has been objected to for having insufficient antecedent basis for the reference of "the daughterboard." Claim and 87 has been objected to for improper antecedent basis for "first and second conductors." Claims 87 and 98 have been amended to recite a proper antecedent basis. In view of these amendments, applicant respectfully requests that claim objections be withdrawn.

Rejections Under 35 U.S.C. § 112

Claims 85, 87 and 88 were Rejected under 35 USC § 112 as improperly nested Markush claims. Applicant had requested reconsideration of objection on the ground that the nesting of the Markush claims had not created "undue multiplicity." (MPEP 2173.05(h). Examiner accurately noted that the regulation as set forth in MPEP 2173.05(h) also prohibits such nesting if a claim is rendered "indefinite." In view of this provision, Examiner noted that if a single conductor cable was elected from claim 84, claim 85 is rendered indefinite. Applicant agrees with the logic of the Examiner's observation, and has amended the claim dependency of claim 85. Claim 85 has been amended to depend from independent claim

one, thereby eliminating undue multiplicity or indefiniteness that can be created by successive Markush claims. In view of this amendment, applicant respectfully requests that the rejections under 35 USC § 112 claims to 85, 87 and 88 be withdrawn.

Rejection Under 35 U.S.C. § 103(a)

Claims 1, 84, 86 and 89-98 have been rejected as being unpatentable Under 35 U.S.C. § 103(a) over Applicant's Admitted Prior Art (Hereinafter "APA") in view of U.S. Patent No. 4,679,321 to Plonski (hereinafter "Plonski") and in view of U.S. Patent No. 5,046,966 to Snyder et al. (hereinafter "Snyder").

Plonski may not be cited as prior art in combination with Snyder or APA

Applicant has reviewed Examiner's comments of paragraph 4.2, and respectfully disagrees with the application of In re Keller, 642 F. 2d 413, 208 USPQ 871 (CCPA 1981) and In re Merk & Co., 800 F.2d. 1091, 231 USPQ 375 (Fed. Cir. 1986). The circuit board described in figures 1A, 1C, 1D and 1E by Polinski includes a substrate 100 with an upper layer comprising an active adhesive 104, a lower layer comprising a conductive terminal pad 102, and a ***non-metalized hole*** 108 (Polinski, column 2, lines 62 to 68).

In contrast to Polinski, Snyder and the APA are directed to ***conductive vias***. For example, U.S. Patent No. 5,046,966 to Snyder is directed to an assembly of a plurality of coaxial cables to a printed circuit board in a highly dense arrangement. (Snyder, column 1 lines 33 through 40). Referring generally to figure 1 of Snyder, an electrical socket 51 with gripping tines 53 is disposed ***within a conductive hole 17***. (Snyder, column five, lines 21-29).

Because Plonski discloses a *non-metalized hole*, whereas APA and Snyder disclose a *conductive via*, any attempt to combine these references would *render them inoperable*.

Applying the conductive holes of Snyder and the APA to Plonski would cause a *short-circuit* in Plonski. Alternatively, using the *non-metalized* holes of Plonski would prevent any signal transmission in Snyder or the APA. Accordingly, any combination of Plonski with Snyder or the APA *would render all of these references inoperable*.

The courts have long held that references that would produce a "*seemingly inoperative device*" cannot be combined in a 35 U.S.C. § 103 rejection, and therefore cannot serve as predicates for a prima facie case of obviousness:

We have noted elsewhere, as a "useful general rule," that references that teach away cannot serve to create a prima facie case for obviousness . . . if references taken in combination would produce a "seemingly inoperative device," we have held that such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness.

McGlyney v. Franklin sports Inc., 262 F. 3d 1339, 60 USPQ 2d 1001 (Fed. Cir. 2001); *In re Sponnoble*, 405 F. 2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969) (references teach away from combination in combinations producing seemingly inoperative device); *In re Gordon*, 773 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (inoperable modification teaches away).

More significantly, as a matter of *law*, the inoperability of a combination means there is *no motivation to combine* Plonski with Snyder, or the APA. Consequently, Plonski cannot be combined with APA or Snyder to form a prima facie case for obviousness. The case law is uniform and absolutely clear on this matter.

*The teaching or suggestion to make the claimed combination **and** the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.*

In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Also see Ex Parte Skinner, 2 USPQ2d 1788, 1790 (B.P.A.I. 1986).

*“If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, **then there is no suggestion or motivation to make the proposed modification.**”*

MPEP 2143.01 (referencing In Re Gordon, 733 F.2d 900 221 USPQ 1125 (Fed. Cir. 1984). As a matter of law, therefore, there is “no motivation to combine” when the combination would render a device inoperable.

For at least these reasons, applicant submits that Plonski cannot properly be combined with APA or Snyder to form a prima facie case for obviousness of Claim 1, as the ***un-metallized holes*** of Plonski would ***render inoperable*** the ***metallized holes*** of APA or Snyder.

Claim 1 is not rendered obvious by Plonski

Because the non-metalized holes of Plonski cannot be combined with the metalized holes of Snyder or the APA in the determination of obviousness, Plonski must be considered by itself in comparison to claim one.

Claim 1 recites, in part,

an electronic cable having a first end and a second end, the first end of the electronic cable being inserted into the first end of the first conductive via and in electrical contact with the ***first conductive via***, the second end of the electronic cable being inserted into the first end of ***the second conductive via*** and in electrical contact with the second conductive via.

Because Plonski does not teach a conductive via, it does not teach all the elements claim one, and therefore cannot establish a prima facie case for obviousness. Moreover, because Plonski specifies *un-metallized holes*, and claim 1 recites *conductive vias*, Plonski is *teaching away* from claim one. Any attempt to combine Plonski with the apparatus described in Claim 1 would render the apparatus of Claim 1 *inoperable*. For at least these reasons, Claim 1 is not rendered obvious under the teachings of Plonski, stands allowable of the teachings of Plonski.

Claim 1 is not rendered obvious by Snyder or APA

Some of the unique aspects of Claim 1 may be better appreciated by briefly reviewing Figure 2A, to which the current application has been restricted. For the examiner's convenience, references include page in paragraph of the original submission, followed by the page and paragraph number according to the document published by the patent and trademark office.

“The interconnection system 200 includes a backplane 201 and a pair of daughterboards 203A and 203B. The backplane 201 includes connector interfaces formed by conductive pins 223(or posts) inserted into conductive vias 211A and 211B and projecting into connector sockets 221A and 221B.”

Application, page 12, paragraph 9 / PTO Publication, page 3, paragraph 47.

In the interconnection system 200 of Figure 2A, *one or more high speed signaling paths are formed by cabled electrical connections between backplane vias instead of conductive traces formed on the backplane 201*. For example, cable 203 extends outside the backplane 201 between vias 211A and 211B, and includes an electronic conductor 205 (i.e., conductor of electric current) electrically coupled at opposite ends to the vias 211A and 211B to establish a signaling path. In contrast to a conductive trace disposed on a submerged backplane layer, the conductor 205 is coupled to endpoints of the conductive vias 211A, 211B, and therefore does not form a reflection-inducing via stub.

Application, page 12, paragraph 10 / PTO Publication, page 3, paragraph 48.

According to the above referenced paragraphs, and Figure 2A of the Application, the *same cable* extending from one conductive via enters the other via to complete a connection *on the same mother board*, thereby electrically coupling *two daughter* boards that extend from the same mother board. This structure should be borne in mind in a comparison of Claim 1 to the prior art.

U.S. Patent No. 5,046,966 to Snyder is directed to an assembly of a plurality of coaxial cables to a printed circuit board in a highly dense arrangement. (Snyder, column 1 lines 33 through 40). However, Snyder does not teach a single electronic cable with a first end in a conductive via extending through a substrate and a second conductive via extending through the same substrate, and an electronic cable with each end coupled to one of the conductive vias in the substrate, (Snyder, column five, lines 21-29), and the APA does not disclose a single electronic cable with both ends coupled to conductive vias within the same substrate either.

In contrast to Snyder, Claim 1 recites, in part,

a substrate having first and second surfaces;
first and second through-holes within the substrate, each through-hole having a first opening at the first surface and a second opening at the second surface;

an electronic cable having a first end and a second end, the first end of the electronic cable being inserted into the first end of the first conductive via and in electrical contact with the ***first conductive via***, the second end of the electronic cable being inserted into the first end of ***the second conductive via*** and in electrical contact with the second conductive via.

Snyder does not teach a conductive cable with both ends coupled to the same substrate, and the APA does not teach this element either. Therefore, even if Snyder and the APA could somehow be combined in a manner suggested by the examiner, their combination

still would not disclose or suggest the elements of Claim 1, and therefore, would not establish a prima facie case for obviousness. For at least these reasons, applicant respectfully submits that Claim 1 stands allowable over Snyder, the APA, and their combination.

Without acknowledging that Plonski may be used in combination with Snyder or the APA, Plonski also does not teach a cable having first and second ends coupled to conductive vias within the *same substrate*. Accordingly, even if Plonski could somehow be combined with Snyder or the APA, as suggested by the examiner, their combination still would not disclose or suggest all of the elements of Claim 1, and therefore would not render claim one obvious. For at least these reasons, independent Claim 1, and claims 84 to 93 which depend from Claim 1 are not obvious in view of Plonski, Snider, the APA, or their combination, and stand in condition for allowance

Claim 2 has been cancelled, thereby rendering moot Examiner's rejection of this claim.

Claims 94-98 have also been rejected under 35 U.S.C. 103(a) as obvious over APA in view of Plonski and in view of Snyder.

Claim 94 for recites, in part:

a substrate having first and second surfaces;
first and second through-holes within the substrate . . .
an electronic cable having a first and second ends, the first end of the electronic cable being inserted into the first end of the first through-hole and in electrical contact with the first conductive via, and the second end of the electronic cable inserted into the first end of the second through-hole and in electrical contact with the second conductive via;

Applicant submits that, for reasons discussed above in conjunction with Claim 1, claim 94 is also not rendered obvious that Plonski, Snider, the APA, and their combination,

and that independent claim 94, and claims 95 to 98 which depend therefrom are therefore allowable over the cited references.

Conclusion

Applicant submits that all pending claims are in condition for allowance. If a telephone interview would be helpful in any way, the examiner is invited to call the undersigned attorney.

A petition for a three (3) month extension of time is enclosed herewith.

Respectfully submitted
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